

REMARKS

Claims 1-2 were pending and under consideration. Claims 3- 10 were previously withdrawn pursuant to a restriction requirement.

In the Office Action of October 11, 2007, claim 1-2 were rejected as obvious in view of Gao et al., (US Pub 2004/0002005).

In response, claims 1 and 2 have been amended to clarify the claimed subject matter and to address various idiomatic errors. No new matter has been added. The rejection is traversed.

Claim 1 as amended makes clear that the electrolyte include a precipitation layer that is formed from the aromatic compound and is distinct from a metal lithium layer formed during a battery charging process.

Gao et al. does not fairly disclose the inclusion of an aromatic compound in an electrolyte, much less one the forms a precipitate film as claimed. Instead, the precipitate noted in the Office Action comprises lithium not returned to the cathode (a solid electrolyte interface (SEI) layer).

As taught by Gao, most of the electrolyte forms a SEI layer on the anode. But, Gao doesn't recognize the problems associated with SEL.

SEI differs in properties from the solvents or additives from which it is formed. SEI from the solvent usually is used to obtain a good electrolyte effect, but shows too much resistance to Li-ion pass through which in turn leads to poor capacity and other unfavorable properties.

As explained in the last full paragraph on page 11 and the paragraph bridging pages 11 and 12 of the present application:

In the secondary battery, when charged, for example, lithium ions are extracted from the cathode 14 and precipitated on the surface of the metal sheet 12A as metal lithium through the electrolytic solution 16 to form the metal lithium layer 12B, as shown in Fig. 2. At that time, the aromatic compound added to the electrolytic solution 16 in the fabrication forms the precipitation film 12C on the metal lithium layer 12B. On the other hand, when discharged, for example, metal lithium is extracted from the metal lithium layer 12B as metal lithium and inserted in the cathode 14 through the electrolytic solution 16 and the precipitation film 12C. Therefore, the precipitation film 12C prevents metal lithium from dendrite growth and

from the reaction between the metal lithium layer 12B and the electrolytic solution 16.

As mentioned, the embodiment has the precipitation film 12C made of the precipitate which is formed during the formation of the metal lithium layer 12B on the metal sheet 12A in the electrolytic solution 16 containing the aromatic compound having the -OX group. Therefore, the dendrite precipitation of metal lithium can be prevented and the risk of short circuit can be reduced while preventing the separation of metal lithium. In addition, the reaction between the metal lithium layer 12B and the electrolytic solution 16 can be prevented. Thereby, the capacity degradation can be prevented and the efficiency of precipitation and dissolution can be improved. As a result, the battery characteristics such as cycle characteristics can be improved.

This precipitate film of the claimed subject matter improves battery capacity and does not diminish it, as occurs in Gao et al. Accordingly, it is submitted that Gao et al. does not fairly render the presently claimed subject matter obvious.

In view of the foregoing, it is submitted that claims 1-2 are patentable over the cited art and that the application is in condition for allowance. Notice to that effect is requested.

Respectfully submitted,

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